

Revision of the microproblematicum *Prethocoprolithus* Elliott, 1962

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Synopsis

The two species of the coprolite-genus *Prethocoprolithus* Elliott, *P. centripetalus* and *P. cucumeriformis*, are now reinterpreted as remains of invertebrate faecal ribbon and of invertebrate tube or burrow respectively. The second species is renamed *Thartharella cucumeriforme*.

Introduction

Prethocoprolithus was instituted by me for certain microproblematica in the Jurassic of the Middle East (Elliott 1962). Both the type species *P. centripetalus* Elliott, and a second species *P. cucumeriformis* Elliott, were considered to be coprolites.

Through the courtesy of Mr F. Bourgeois, who very kindly called on me in London to discuss these microfossils, I am able to give emended diagnoses and different interpretations of these objects. Mr Bourgeois, who has seen similar fossils in the Jurassic and Permian of the Middle East since my original descriptions, recognized that *P. centripetalus*, whilst coprolitic, was debris of faecal ribbons rather than separate faecal pellets, and that *P. cucumeriformis* was an organic tubular structure, not coprolitic.

Prethocoprolithus is thus available as a name for remains of this type of faecal ribbon, known to be common to several living bivalve genera where debris can be matched with the living mollusc, and the new figures given are taken from fossil material in the original type thin-section. '*P. cucumeriformis*', much less common in my experience, is renamed and reinterpreted, again from its original type thin-section.

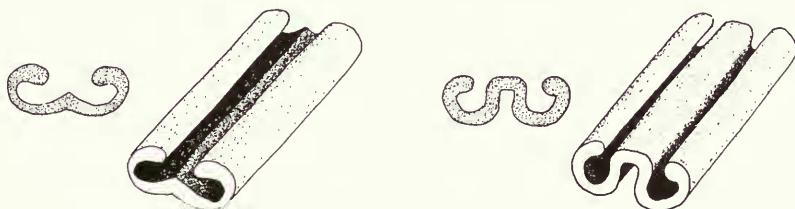


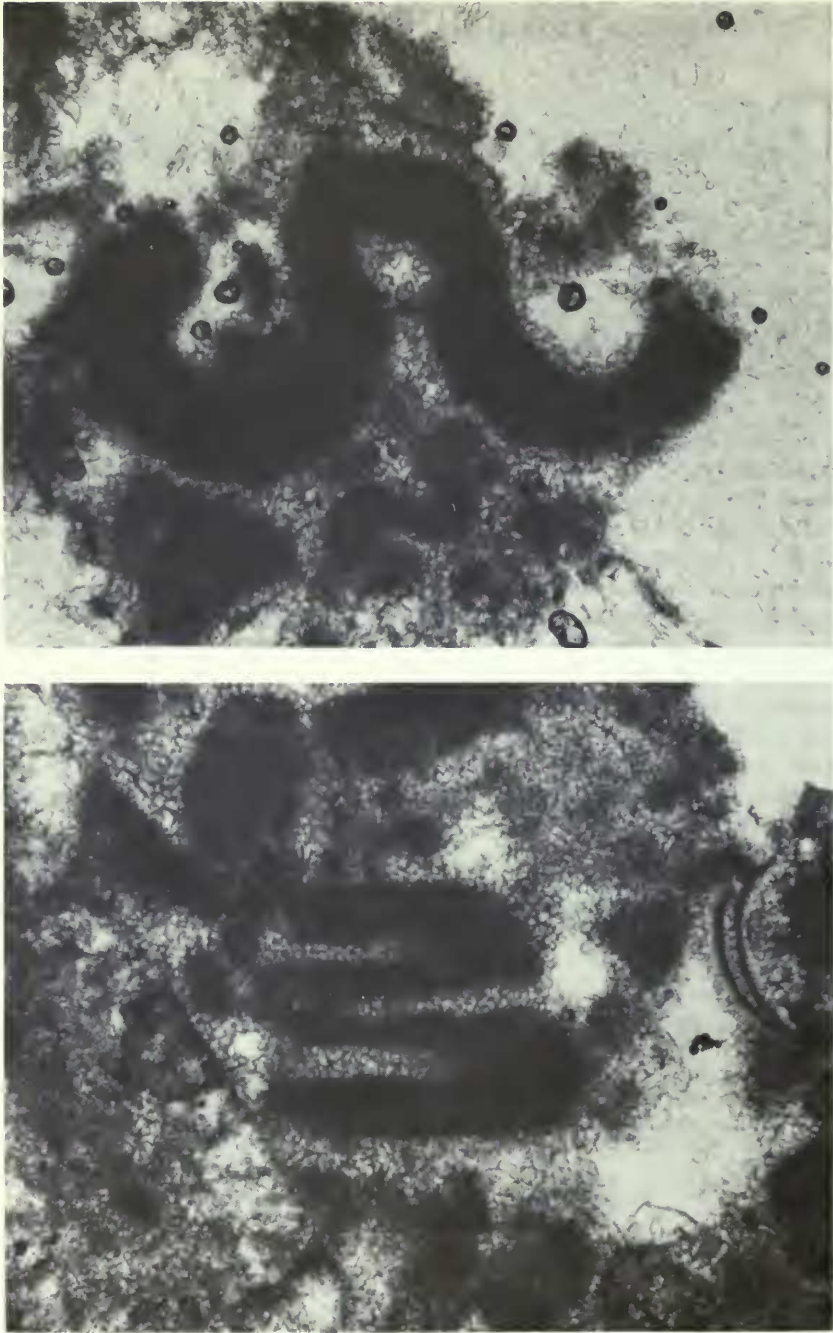
Fig. 1 Diagrammatic representations, section and projection, of faecal ribbons of present-day *Mytilus* (left: based on Moore 1939), and *Prethocoprolithus* (right).

Systematic and discussion

Genus *PRETHOCOPROLITHUS* Elliott, 1962

Figs 1-3

DIAGNOSIS (revised). Remains of ribbon-like faecal strips, the thin ribbon being strongly folded three times longitudinally, the rounded median fold being in the opposite direction to the two rounded lateral folds, to give a cross-section like a letter *s* with an additional turn. Originally described from the Mesozoic of the Middle East, but likely to be widespread from Upper Palaeozoic onwards.



Figs 2, 3 *Prethocoprolithus centripetalus* Elliott. 2, vertical cross-section, and 3, oblique cross-section, of faecal ribbon at right-angles to long axis. Thin section, $\times 100$; BM(NH) Palaeont. Dept. reg. no. Z929. Upper Jurassic Najmah Formation, Mileh Tharthar Well no. 1, Dulaim Liwa, Iraq.

TYPE SPECIES. *P. centripetalus* Elliott 1962.

DESCRIPTION. Faecal ribbons of this general kind characterize some living bivalves (family Mytilidae, certain oysters, etc.) and have been figured many times (e.g. Edge 1934, Moore 1939, Manning & Kumpf 1959). In these living examples the treble folding is achieved partly by curvature but partly by thickening of the ribbon medially and to a lesser extent marginally (Fig. 1). *Prethocoprolithus* is exceptional in having rounded 'anticlinal and synclinal' folds along a ribbon of apparently near-uniform thickness. Much of the faecal material is broken, but the type slide shows a near-vertical true cross-section (Fig. 2), and also examples of an oblique-longitudinal section showing two paired sections each of the two walls of marginal folds, united at the ends where the plane of section cuts the connections (Fig. 3). In my original erroneous interpretation I regarded these as adventitious juxtaposition of separate tubular coprolites.

The original materials examined by me were from the Jurassic of Iraq, with one probable example from the Triassic of the same area. From the presumed origin of this type of faecal ribbon, they are likely to occur throughout the full geological range of the appropriate bivalves. A calcite-filled section of an indeterminate thin-shelled bivalve occurs in the type slide.

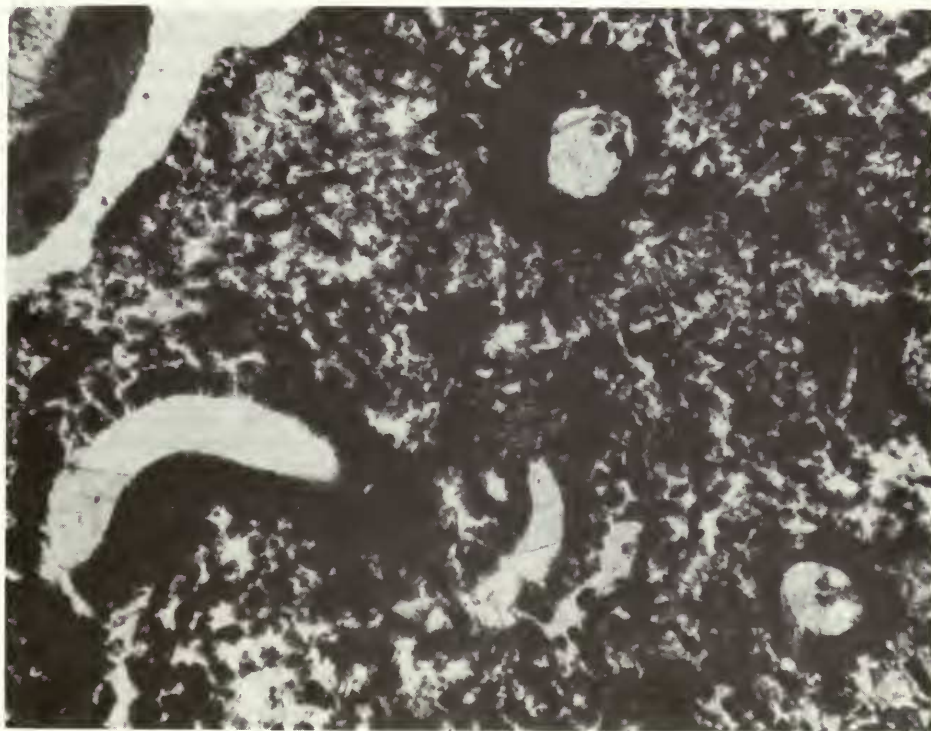


Fig. 4 *Thartharella cucumeriforme* (Elliott). Various sections of curved burrow with laminated walls. Thin-section, $\times 40$, reg. no. Z928; Upper Jurassic Gotnia Formation, Mileh Tharthar Well no. 1, Dulaim Liwa, Iraq.

Genus *THARTHARELLA* nov.

Fig. 4

DIAGNOSIS. Small curved tubular structures, possibly burrows, showing a sharply delimited central tubular cavity, surrounded by a cylindrical zone of horizontally laminated material, with ragged outer edge. Generic name taken from the Iraqi type-locality.

TYPE SPECIES. *Prethocoprolithus cucumeriformis* Elliott 1962; Jurassic of Iraq.

DESCRIPTION. These structures are calcite-filled in the type material. Around this centrally-placed former cavity is a tubular zone of horizontal laminae, at right angles to the long axis. In vertical section this outer zone is strongly laminated; in cross-section a single lamella is flocculent or amorphous (Fig. 4).

The structure suggests a tube, or tubular burrow, possibly of an annelid or other marine worm, in which the animal occupied the centre and an outer zone of bristles or appendages modified the sediment by cementation with organic matter. Alternatively this could have been the effect of oral appendages 'moving-up' during growth.

I have seen a fossil like *Thartharella* from the Triassic of Iran, but have no precise records.

References

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